Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently Amended) A method for compensating for the chromatic dispersion in optical systems, the method comprising the steps of:

separating input optical radiation into distinct chromatic components;

propagating said distinct chromatic components through the optical system, said propagating including the steps of:

reflecting said distinct chromatic components from a holographic mirror; ~~and,~~

providing, through said reflecting, a pre-selected relationship between optical path lengths of said distinct chromatic components, said pre-selected relationship substantially compensating for the chromatic dispersion; and,

recombining said distinct chromatic components, after propagating through the optical system;

~~wherein,~~ in order to provide said pre-selected relationship, said holographic mirror has reflection properties different from a conventional mirror;

~~wherein,~~ in reflecting said distinct chromatic components, a direction of propagation of said distinct chromatic components being ~~is~~ altered by means of diffraction by said holographic mirror;

~~whereby,~~ in reflecting said distinct chromatic components by means of diffraction, an angle of incidence does not equal an angle between a direction of propagation of said reflected distinct chromatic components and a normal to a surface of said holographic mirror at substantially a location of incidence, said reflected distinct chromatic components emanating from said surface.

2. (Canceled)

3. (Original) The method of claim 1 wherein the step of reflecting said distinct chromatic components further comprises the step of:

reflecting said distinct chromatic components from a switchable pixellated holographic mirror.

4. (Original) The method of claim 1 further comprising the step of:

focusing the input optical radiation.

5. (Original) The method of claim 1 wherein the step of separating input optical radiation into distinct chromatic components comprises the step of:

propagating the input optical radiation through at least one separating diffraction grating.

6. (Original) The method of claim 5 wherein the step of recombining said distinct chromatic components comprises the step of:

propagating the distinct chromatic components through at least one recombining diffraction grating.

7. (Original) The method of claim 6 wherein said at least one recombining diffraction grating is the same as said at least one separating diffraction grating.

8. (Currently Amended) A chromatic dispersion compensated optical system comprising:

an optical separating sub-system capable of separating input optical radiation into distinct chromatic components;

an optical recombining sub-system capable of recombining said distinct chromatic components for output; and,

a volume holographic mirror capable of reflecting said distinct chromatic components and providing, through said reflecting, a pre-selected relationship between optical path lengths through the optical systems of said distinct chromatic components, said pre-selected relationship substantially compensating chromatic dispersion; said volume holographic mirror being optically disposed between said optical separating sub-system and said optical recombining sub-system;

~~wherein,~~ in reflecting said distinct chromatic components, a direction of propagation of said distinct chromatic components <u>being</u> ~~is~~ altered by means of diffraction by said holographic mirror;

~~wherein,~~ in reflecting said distinct chromatic components, a direction of propagation of said distinct chromatic components <u>being</u> ~~is~~ altered by means of diffraction by said holographic mirror;

~~whereby,~~ in reflecting said distinct chromatic components by means of diffraction, an angle of incidence does not equal an angle between a direction of propagation of said reflected distinct chromatic components and a normal to a surface of said holographic mirror <u>at substantially a location of incidence</u>, said reflected distinct chromatic components emanating from said surface.

9. (Previously Presented) The optical system of claim 8 further comprising:

a switchable element selected from the group consisting of a switchable grating, a switchable mirror array, a switchable liquid crystal array, a cross-connect, an add-drop multiplexer, an interleaver and a band channelizer;

said switchable element optically interposed between said volume holographic mirror and said optical recombining sub-system.

10. (Previously Presented) The optical system of claim 8 further comprising:

an optical focusing component capable of focusing separated input optical radiation onto said volume holographic mirror.

11. (Previously Presented) The optical system of claim 8 wherein said volume holographic mirror comprises a pixellated switchable holographic mirror.

12. (Original) The optical system of claim 8 wherein said optical recombining sub-system is the same as said optical separating sub-system.

13. (Previously Presented) The optical system of claim 9 further comprising:

a directing optical element capable of directing the separated input optical radiation to said volume holographic mirror; and,

a redirecting optical element capable of redirecting optical radiation reflected from said volume holographic mirror to the switchable element.

14. (Currently Amended) A chromatic dispersion compensated optical system comprising:

a pair of separating diffraction gratings capable of separating input optical radiation into distinct chromatic components;

a holographic mirror capable of reflecting said distinct chromatic components and providing, through said reflecting, a pre-selected relationship between optical path lengths of said distinct chromatic components through the optical system, said pre-selected relationship substantially compensating chromatic dispersion; ~~and,~~

a switchable element capable of receiving the separated distinct chromatic components and outputting separated distinct output chromatic components; and,

a pair of recombining diffraction gratings capable of recombining said outputted separated distinct chromatic components;

said switchable element being optically interposed between said holographic mirror and one of said pair of recombining diffraction gratings;

~~wherein,~~ in reflecting said distinct chromatic components, a direction of propagation of said distinct chromatic components <u>being</u> ~~is~~ altered by means of diffraction by said holographic mirror;

~~wherein,~~ in reflecting said distinct chromatic components, a direction of propagation of said distinct chromatic components <u>being</u> ~~is~~ altered by means of diffraction by said holographic mirror;

~~whereby,~~ in reflecting said distinct chromatic components by means of diffraction, an angle of incidence does not equal an angle between a direction of propagation of said reflected distinct chromatic components and a normal to a surface of said holographic mirror <u>at substantially a</u>

location of incidence, said reflected distinct chromatic components emanating from said surface.

15. (Previously Presented) The optical system of claim 14 wherein the switchable element comprises:

a switchable element selected from the group consisting of a switchable grating, a switchable mirror array, a switchable liquid crystal array, a cross-connect, an add-drop multiplexer, an interleaver and a band channelizer.

said switchable element optically interposed between said volume holographic mirror and said optical recombining sub-system.

16. (Previously Presented) The optical system of claim 14 further comprising:

an optical focusing component capable of focusing separated input optical radiation onto said holographic mirror.

17. (Original) The optical system of claim 14 wherein said pair of recombining diffraction gratings is the same as said pair of separating diffraction gratings.

18. (Previously Presented) The optical system of claim 9 further comprising:

a directing optical element capable of directing the separated input optical radiation to the volume holographic mirror;

a redirecting optical element capable of redirecting optical radiation reflected from the volume holographic mirror to the switchable element.

19. (Original) The optical system of claim 8 wherein said optical separating sub-system comprises:

a pair of diffraction gratings.

20. (Original) The optical system of claim 8 wherein said optical recombining sub-system comprises:

a pair of diffraction gratings.

21. (Previously Presented) The optical system of claim 8 wherein said volume holographic mirror comprises a phase conjugate mirror.